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ABSTRACT

Societal changes driven by computer technology have contributed to the call for schools to prepare information-literate students. This paper presents findings of a case study that examined the roles that principals played in successful efforts to mainstream information-literacy instruction. The study also examined whether the change-implementation processes associated with successful school innovation were present in two case-study schools, one rural and one high school. Data were gathered from interviews with eight informants at each site--principals, library-media specialists (LMSs), assistant principals, teachers, and support staff. All six mechanisms were found in the rural school--vision building, evolutionary planning, empowerment, resource mobilization, problem coping and monitoring, and restructuring. The urban school exhibited evidence of all but the restructuring process. The principals played the roles of direction setter, communicator, and facilitator. Conclusions are that: (1) the substance of mainstreaming seems to force restructuring; and (2) engaging in ongoing communication is a key principal role. (Contains 70 references.) (LMI)

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High School Principal Roles and Implementation Themes for Mainstreaming Information Literacy Instruction

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Introduction

Because of societal changes driven by computer technology, schools have been called to prepare information literate students (Anderson, 1993; Association for Supervision and Curriculum Development, 1991; Behrens, 1994; Hall, 1986; Kuhlthau, 1987, 1993; National Commission on Library and Information Science & American Association of School Librarians, 1989; U.S. Department of Labor, 1991; White, 1987). According to these sources, information literacy is the ability to access, retrieve, use and manage information electronically. This new literacy supplants the traditional skills it encompasses--computer, library, critical thinking, and literacy (Kuhlthau, 1987; White, 1987).

The impact of computer technology on finding and retrieving information has been dramatic. In the past, searchers used print indexes and card catalogs to access a universe of knowledge bounded by a library facility. Knowledge of basic reference materials and the ability to alphabetize comprised basic library literacy. When unsuccessful, searchers were able to consult with resident librarians. As libraries acquired information technologies, the competencies necessary for successful information finding changed. The universe of accessible information expanded as modems linked information repositories and enabled searchers to access information from locations which do no have the intermediation services of trained library professionals. Moreover, find and retrieving information electronically requires complex linguistic and thinking skills idiosyncratic to online sources (Epler, 1989; Harter, 1986; Kuhlthau, 1987; Neuman, 1991; Palmer, 1987; Pao, 1989; White, 1987, 1990).

Although high school library media programs are likely settings for instruction in information finding skills, student access to it is not universal because these programs are outside of the instructional mainstream. No mechanism regulates universal access. Principals face a challenge: mainstreaming a marginalized program involves significant change. It would be helpful if research offered principals guidance on mainstreaming issues--the instructional needs of information searchers, the capacity of the existing high school programs to respond to those needs, the role of the principal in educational change, the implementation processes associated with successful change, and the strategies for successful integration of technology.

This paper purposes to provide information to high school principals seeking to prepare

information literate students. First, it reviews research in five theoretical frameworks which shaped its questions. Second, it describes the methodology used to conduct the investigation. Next it reports the findings from two case studies and draws conclusions. The paper concludes with implications for practitioners and researchers.

Instructional Need

Research across age and education groups demonstrates that the complex information-finding skills associated with information technologies have to be learned and practiced. Whether the sample included graduate library science students preparing to be online specialists (Fenichel, 1979; Harter, 1986), university students (Allen, 1989, 1990; Barbuto & Cevallos, 1991; Blumenthal, Howard, & Kinyon, 1993; Charles & Clark, 1990; Dwyer, Gossin, & Martin, 1991; Goodin, 1987; Maidenberg, 1991; Wozny, 1988) or high school students (Callison & Daniels, 1988; Neuman, 1991), researchers have found that uninstructed subjects experience problems with accessing and retrieving information electronically. According to their findings, these problems respond to instructional intervention, if adequate time for learning and practice are provided. Neuman (1991) points out that finding adequate time for this instruction in the already crowded high school curriculum requires re-examination of the traditional manner in which information skills are integrated into instruction.

Effectiveness of High School Library Media Programs

High schools, in particular, seem well equipped to respond to the call to provide students with information literacy instruction. Staffing typically includes a principal, a library media specialist (LMS), and teachers with content specialization. The program of studies is a diverse array of subject matter that matches the content of information technologies.

However, as Eisenberg, Spitzer, Kingley, and Darby (1990) point out, student opportunity to receive this instruction is not universal. The problem lies in the library media program's marginalized status: it is outside of the high school program's mainstream. When a body of knowledge is deemed essential for all students to master, it becomes part of the program mainstream because organizational mechanisms such as scheduling and graduation requirements ensure universal student exposure. Lacking this status means that LMS must negotiate with classroom teachers for the time and opportunity to teach information skills. Hall (1986) points out

that these negotiations are hampered by the fact that teachers lack information skills themselves and have no knowledge of the difficulties their students face with information searching. As a result of teacher discretion, students receive random access to instruction, varying lengths of exposure, and have little or no accountability for search performance. However, none of this research offers viable alternatives to traditional strategies for information skill integration.

Principal's Role in Change

If information skills were mainstreamed into the high school program, then the problem of universal student access is resolved. Mainstreaming a marginalized program requires that the principal play a significant role in leading educational change. Defining the role of the principal in change is dependent upon a complex, synergistic relationship among the organizational context, the nature of change, and role language. Beck and Murphy's overview (1993) traces the migration of the organizational paradigm of schools from bureaucracy to ecology, the nature of change from single intrusion to continuous process, principal roles from instrumental to generative, and role language from descriptive to metaphorical.

From the earliest literature on the principalship through the 1970's, the principal was viewed as the expert leader of an hierarchical enterprise efficiently managed by scientific principles derived from research (Beck & Murphy, 1993). Improvement called for the educational manager to manipulate organizational linkages to achieve desired means (Owens, 1987). Principal roles were conceptualized as manager and administrator (Beck & Murphy, 1993). During the 1980's, the prevalent paradigm called principals to be instructional leaders of school cultures and managers of their bureaucracies who effected school improvement through both bureaucratic and sociocultural dimensions (Duke, 1987; Firestone and Wilson, 1985; Reitzug & Reeves, 1992; Smith & Andrews, 1989; Wilson & Corcoran, 1988).

When the decade of the 1980's ended without significant improvement, educators and researchers began to question whether school reform could occur without reconceptualizing leader roles (Blumberg & Greenfield, 1986), school context (Blumberg & Greenfield, 1986; Huberman & Miles, 1986), and educational change (Fullan & Stiegelbauer, 1991; Deal, 1986). The stage was set for a paradigm shift from a bureaucratic to heterarchical or ecological conceptualization of context with corresponding changes in leader roles and nomenclature.

A host of writers and researchers began to describe organizations as complex, nonrational systems in which goals are not well defined, linkages are replaced by complex interdependencies, and change is a dynamic process which begins with the individual and flows organizationally through the complex interdependencies (Leithwood, 1992; Patterson, Purkey, & Parker, 1986; Sarason, 1990; Senge, 1990; Sergiovanni, 1991). Senge (1990) describes this kind of organization as a learning organization and argues that the role of leadership is the perpetuation of learning processes. Zuboff (1988) concludes that, because technology distributes information across the dimensions of an organization, it accelerates shared leadership.

It can be argued that the ecological model is useful for looking at how high schools implement technology. According to Wilson and Corcoran (1988) and Louis and Miles (1990), high school contexts, in particular, are complex, loosely coupled organizations with members whose content expertise defines the boundaries for their decision making. Balkanization by subject specialization distributes the power to bring about change to departments and individual teachers. Change in such a setting is a holistic, complex, and dynamic process (Fullan, 1993; Fullan & Stiegelbauer, 1991; Louis & Miles, 1990).

If the organizational paradigm shifts to a heterarchical, generative model, then the nature of leadership changes. Sergiovanni (1992) and Leithwood (1992) argue that leadership in such ecologies is transformational, not transactional. Effective principals do not engage primarily in the transactional behaviors of commanding or bartering with followers to implement change. Instead, their role is transformational: they distribute leadership among members by nurturing individual and organizational capacities to initiate change and lead the implementation process. This sociological perspective complicates the naming of principal roles because process interactions take place continuously across multiple dimensions of the context. A new vocabulary for leader roles that moves from the realm of phonetic description of functional reality (role noun-task) to the semantic description of substantive reality (role noun-process) is necessary (Starratt, 1993).

Change Roles as Metaphors

Organizational theorists and researchers in education and corporate realms have begun to use metaphorical nouns to describe transformational leader roles. Beck and Murphy (1993) call principals to servant leadership as organizational and social architects. Starratt (1993) employs the

theatrical metaphors of player and director. Nanus (1992) pictures the visionary leader as a direction-setter who scans the external environment to anticipate change and the internal environment to assess the organization's capacity to deal with that change. Senge's designer (1990) is responsible for creating and sustaining the learning processes which build an organization's individual and collective capacity to respond proactively to change and generate new change. He requires the designer to be a systems thinker who is able to recognize the complex interactions set off by a change in any part of an ecology. What is not clear from this literature is whether these leader metaphors are characteristic of high school principals engaged mainstreaming. To determine whether these metaphors are valid, one also needs an understanding of the educational change process in which they are operationalized.

Nature of Educational Change

Research on educational change describes it as a complex and dynamic process (Fullan, 1993; Fullan & Stiegelbauer, 1991). In their study of five urban high schools that had undertaken significant school improvement projects, Louis and Miles (1990) identified five themes associated with implementing significant change--vision building, evolutionary planning and development, initiative-taking and empowerment, resource and assistance mobilization, and problem-coping. In their subsequent synthesis of the research on educational change, Fullan and Stiegelbauer (1991) added a sixth process called restructuring.

Vision Building

In successful school improvement, Louis and Miles (1990) found that visions evolve and that the principal plays a collaborative, rather than prescriptive role:

> The process of spreading the vision is, however, less dependent on the articulateness and persuasiveness of the individual than on his or her willingness to structure opportunities for all interested faculty to discuss their aspirations for the change program and the school, and to be patient in trusting that staff members will take on the collective responsibility for refining the vision through shared action. (p. 237)

Evolutionary Planning

Louis and Miles (1990) discovered that successful change resulted when implementers

flexibly applied aspects of both rationality and incrementalism to the improvement effort. Rational planning results in blueprints for change originating from the top of the organizational hierarchy. Incremental planning, at the other end of the continuum, relies on the accumulation of myriad small decisions made at the lowest possible organizational level in order to muddle through to the desired end by capitalizing on opportunities as they occur. Evolutionary planning rolls opportunistically and bidirectionally along the continuum.

Initiative-taking and Empowerment

Initiative-taking and empowerment feed and are fed by the vision-building and planning themes. Louis and Miles (1990) discovered that, regardless of the source of the innovation, successful implementation depended on power sharing and collaboration among stakeholders across the organization horizontally and vertically. Given the departmentalization of high schools, it is not surprising to find that initiatives for change can spring up from a variety of sources. For the principal, it means promoting and fostering leadership skills among people in the implementation network; having both the trust and patience that teachers can and will own, adopt, and lead an initiative; and building individual and organizational capacity for shared leadership.

Resource and Assistance Mobilization

Mobilizing resources for change involves negotiating the acquisition and deployment of resources to implement the improvement project. Louis and Miles (1990) classify resources as money, structural resources, content resources, assistance, and psychosocial support. In the successful schools, Louis and Miles found that principal leaders played key roles in acquiring and deploying the extra resources which were necessary to support implementation.

Problem-Coping

Louis and Miles "found coping to be the single most important influence on outcomes" (1990, p. 280). Problem coping involves continuous monitoring of the change process as well as its outcomes; proactive problem-finding through ongoing, open communication; and effective coping strategies. They identified two levels of coping. Shallow coping, characterized by nonaction, procrastinating, or use of normative routines, contributes to the failure of school improvement projects. Deep coping involves creative use of the other themes--vision-building, rolling planning, and empowering people--to move the implementation effort forward.

Restructuring

To the five themes identified by Louis and Miles, Fullan and Stiegelbauer (1991) added a sixth theme--restructuring. Their definition includes the "organizational arrangements, roles, finance and governance, and formal policies that explicitly build in working conditions that...support and press for improvement." (pp. 87-88). They argue that significant change will not occur until schools are restructured. Their argument is supported by a chorus of educators (Conley, 1993; Goodlad, 1984; Murphy, 1991; National Commission on Time and Learning, 1994; Purnell & Hill, 1992; Sarason, 1990; Schlechty, 1990) and by advocates of the effective use of technology in schools (Cohen, 1988; Cuban, 1992; Papert, 1993; Sarason, 1990; Schlechty, 1990; Sheingold, 1991; White, 1987). While Louis and Miles identified themes or processes associated with successful implementation of change in high schools, none of the schools in their research was engaged in implementing technology or programmatic change associated with it. Are their implementation processes characteristic of program change driven by technology? Is it possible to mainstream information literacy successfully without restructuring?

Technology in Schools

The literature on technology in schools deals almost exclusively with the integration of technology into classrooms, not library environments, and with the reasons for failed integration, rather than descriptions of successes. Historically, technology has collided with traditional schooling, a collision which has been fatal to technology's impact on learning (Cohen, 1988; Goodlad, 1984; Cuban, 1986, Hall, 1986; Nickerson & Zodhiates, 1988; Mojkowski, 1990; Pelgrum & Plomp, 1991; Sarason, 1990; Schlechty, 1990; Snider, 1992). Regardless of the technology, the reasons cited by these writers can be labeled as mismanagement of educational change--unclear educational outcomes, inadequate capacity-building strategies, failed administrative support, and inadequate resources.

Because integration of information skills associated with library technologies is dependent on teacher gatekeeping, it is useful to discover what criteria teachers use for making decisions about integrating technology. Cuban (1986) argues that teachers utilize situationally constrained choice, a practicality ethic in which they decide to adopt only what they perceive helps them individually to do a better job. If the perception is positive, they become adopters, and students

have learning opportunities. When their perception is negative or uninformed, they do not incorporate technology into their practice. If teachers are unaware of the difficulties associated with electronic searching or mistake the speed and quantity of electronic retrieval for quality and relevance, they may allocate little, if any time for instruction in effective use.

The Problem

High school principals face a challenge. If all students are to be proficient information finders, principals will have to move information skill instruction into the program mainstream of their high schools. Because the literature offers limited insight into specific leader roles and change themes for mainstreaming, this study sought to explore these topics. Its purpose was to discover and describe the role of the high school principal in mainstreaming instruction associated with library information technologies. The questions which guided it were: 1) what roles have high school principals played in successful efforts to mainstream information literacy instruction; 2) are the implementation themes identified by Louis and Miles (1990) and Fullan Stiegelbauer (1991) present during successful mainstreaming efforts.

Design and Conduct of the Study

Because of the nature of its questions, this investigation consists of two case studies--Lawton High School, an urban site, and Grafton High School, a rural site. Data were collected and analyzed during the spring of 1993.

Sampling

Chain sampling identified potential sites (Patton, 1990). Twenty contacts in seven northeastern states were made. LMSs in nominated sites were contacted by telephone to respond to questions on an interview guide designed to identify information-rich sites. Questions were based on five discriminating criteria--information technologies, staffing, defined information skill learning outcomes, the principal's leadership role, and documention of student access to instruction. The criteria narrowed the pool of potential sites to three schools--one each in a rural/emerging suburban area, a suburban town, and an urban area. Problems with access eliminated the suburban site. When unable to identify another viable suburban site, the investigator conducted the study in two sites--Grafton High School, a rural site and Lawton High School, an urban site.

Data Collection

Data were gathered from interviews with school personnel and from school documents. Principals and LMSs were interviewed using question guides. The selection of subsequent informants was opportunistic in that these interviews drove the selection of the next informant. Eight informants, including assistant principals, teachers, and support staff, were interviewed in each site. Informants and the schools were guaranteed anonymity and confidentiality.

Artifact data were gathered to triangulate interview data. The primary purpose for gathering document evidence was to determine whether students have universal access to information skill instruction. Artifacts included LMSs' instructional calendars and lesson plans, the schools' master schedule, instructional materials, grade reports, newsletters, and memoranda.

Data Analysis

Mining the data for findings was facilitated by a computer program (Padilla, 1991). Initial role codes were derived from the literature--visionary designer, empowering facilitator, and monitoring manager. Initial implementation codes were the six implementation themes defined by Louis and Miles (1990) and Fullan and Stiegelbauer (1991). Changes to these codes resulted when emergent data forced redefinition and reclustering.

Trustworthiness

Trustworthiness was addressed through accepted methods for qualitative studies. Triangulation, member checking, the investigator's status as positioned subject (Rosaldo, 1989), and peer debriefing established credibility. Conducting the study in two different school contexts, tying its findings to theoretical frameworks, and reporting the cases with detailed descriptions of principal roles and implementation processes enhanced transferability. A consumer check also contributed to applicability: two principals in high schools similar to the schools in the study read the case descriptions to determine whether there was sufficient information to apply its findings to their schools. An audit of the investigator's recordkeeping in the form of logs for site selection and access processes, reflective field notes, a memoing journal, and data organization for retrieval verified consistency, or dependability. Confirmability, or neutrality, was established through triangulation, peer reviews, and member checks.

Results

Findings are reported by case, beginning with Grafton High School. Each case includes a description of its setting, mainstreaming process, and findings.

Grafton High School

Grafton High School, a comprehensive high school for grades 9-12, is located in southeastern Connecticut. It is a regional high school which serves three communities whose population of 15,154 is predominantly white, nonHispanic (The Connecticut Sate Data Center, Office of Policy and Management [OPM], 1991). Built in 1970 and extensively renovated in 1985, Grafton High School, at the time of the study, served approximately 670 students, 99% of whom are Caucasian. Students typically begin their education in one of the region's four elementary schools and spend grades 7 and 8 in the middle school before entering their freshman year at Grafton. More than 90% of the students graduate from Grafton; 81% pursue post-secondary education. If Scholastic Aptitude Test scores are a reflection of students' academic potential, Grafton students are above the national average. Although the communities had been supportive of education as indicated by per student expenditures above the state average ($7410/student), the budget for the 1993-94 school year had not been passed at the time this study was conducted.

A staff comprised of 1.6 LMSs and 3.5 library aides deliver the library media program services to Grafton's students and staff. The .6 specialist, who is shared with the middle school, coordinates the distribution of audiovisual materials and equipment. The Grafton center is stocked with these resources: 22,000 books, 115 serials, supporting audiovisual materials, and microforms. Library information technologies include 3 CD-ROM sources (Mammals, Compton's Encyclopedia, NewsBank, and DIALOG, a modem-accessed collection of full-text and bibliographic sources on a variety of subjects. There are two rooms adjacent to the library media center which house computers. One room houses three workstations for student use during the school day. The other area is a networked laboratory of 24 computers for Information Management class instruction.

Grafton's Mainstreaming Strategy

All students receive equal and universal opportunity to learn and practice information finding skills through a restructured ninth-grade program. Restructuring began when Sally Pohl

was hired as the new principal in the spring of 1991 and began dialoguing with staff regarding student needs, especially in the area of research skills. Recognizing that these needs could not be addressed in a traditional program, she collaborated with teachers and the schools' two assistant principals to design a new ninth-grade experience.

In the new program, freshmen are divided into two teams, each of which has five groups. They are taught by teachers, who volunteer to be part of the program, during blocks of time which are different from the traditional high school schedule. In the interdisciplinary block (regular periods 1-5), students study mathematics, science, social studies, and English. During another period, they rotate in three-week intervals among physical education/health, guidance, and Information Management. Periods 6 and 7 are reserved for electives--art, foreign language, home economics, technology education, and music.

"Information Management," a half-credit required course, integrates instruction in keyboarding, word processing, data management, and research and study skills with classroom learning activities. These skills are the core of information literacy. Students receive a grade for their performance, including their proficiency at finding information from the library's print and electronic resources. As a result, all freshmen at Grafton have equal opportunity to learn and practice access and retrieval skills.

Grafton's mainstreaming journey involved ongoing dialogue, consensus building, building individual and collective capacities, and multiple revisions. After building consensus on a menu of educational changes, the principal wove them together to design the new program. The program proposal raised parent and board of education concerns regarding electives and graduation requirements. While addressing these concerns through program revisions and communication strategies, the principal continued to provide the staff with needed resources. Resources included extensive staff development, supervision in the form of support for risk taking, restructured time for instruction and planning, and reconfiguration of space for new information technologies. The staff implemented the program in the fall of 1992.

While enthusiastic regarding the program, Grafton's teacher-implementers have identified significant problems with the program. Among the issues they have begun to address are the inadequate number of information technologies available for student use, the instructional and

curricular discontinuity of the three-week rotation schedule, their struggles with interdisciplinary teaching, and the implications of scheduled instructional times for the LMS.

Grafton Principal Roles: the Designer

The first question which guided this investigation asked what role(s) high school principals play in mainstreaming information finding skills. Data defined two roles for Grafton's principal--designer and communicator. The designer role included three generative behaviors--visionary, architect, and transformational facilitator--which are highly interactive.

Visionary behaviors. Informants described the principal's vision for enabling all students to be information literate, her role in nurturing their beliefs regarding its importance, and her impassioned commitment to them and the program. Data revealed that, as staff moved to consensus on a shared vision for information literacy, Pohl became its impassioned preserver. When obstacles threatened it, she defended and protected teachers as they implemented the program and cheered them on when circumstances shook their commitment. It is significant that Pohl began the mainstreaming process with the intent of shifting her role from leader to cheerleader as teachers assumed leadership of the ninth-grade program.

Architect behaviors. The description of Pohl's architect behaviors is a significant finding. Just as architects design or redesign structures for specific purposes, so organizational architects design or restructure organizations to make them function more effectively. The case record chronicles her creation of new organizational patterns and roles for staffing, decision making, instruction, and scheduling. This redesign engaged the organizational mechanisms of scheduled time; graduation requirements, and grade reporting to guarantee universal student access.

Transformational facilitator behaviors. However, if Grafton's principal had simply crafted a new program without designing processes to insure that others could lead and manage it, she would have repeated the leader behaviors which are associated with unsuccessful educational change. Instead, data described how she and the assistant principal engaged in both supportive and generative behaviors which empowered the staff to carry the project forward while simultaneously transforming organizational roles and responsibilities. During a group interview, ninth-grade teachers spoke to supportive behaviors such as staff development, class coverage, conference attendance, and planning time and to behaviors which let them assume leadership of the program:

> [The principal is] always asking, 'Well, what's the next step? If what you're doing isn't working, how could you do it so it would work? If you don't want to do this part more, what are you going to put in its place?...Tell me the parts that don't work, and we'll get the part to work. Tell me the parts that you need my help on, and I'll help you with it.'

A related finding is significant for mainstreaming. Data describe how the principal had begun to transform the professional beliefs and practice of the full-time LMS to match her new role as a teacher in a required course. Pohl provided the LMS with supervisory encouragement and training through the assistant principal, technical support through a technician/teacher, and multiple opportunities for visitations and professional development.

Grafton Principal Roles: The Communicator

The nature of the principal's ongoing dialogue with Grafton's constituencies was the determining factor in separating out the communicator role. Data clustered principal behaviors into listening, questioning, and explaining categories. These behaviors describe a principal who gathered stakeholders' input by posing questions, actively listening to responses, and integrating feedback. When appropriate, Pohl explained and clarified. What case evidence clearly revealed is that these behaviors were not unidirectional. For example on those occasions when Pohl attended team meetings, her participation was as an equal. According to teachers, Pohl did not engage in the telling narratives of an expert leader. Instead, she dialogued with them about mutual concerns and responsibilities, and possible solutions.

Grafton Implementation Themes

The second question driving this investigation asked whether the implementation themes or processes identified by the Louis and Miles study (1990) and amended by Fullan and Stiegelbauer (1991) are present in successful mainstreaming efforts. The Grafton finding is that all themes--vision-building, evolutionary planning, empowerment, resource mobilization, problem-coping, and restructuring--were present and ongoing phenomena. Data suggest that, because mainstreaming involves ongoing adult learning in content, pedagogy, leadership, and technology, the themes are likely to be ongoing characteristics of mainstreaming efforts.

Vision building. Data revealed that, although Grafton's principal had a strong personal

vision regarding information skill instruction, she invited participation in shaping a shared vision which integrated teachers' input. Part of her vision strategy included stepping down from her leadership role so that the ninth-grade teachers could lead the program--a transference of power and decision making already underway at Grafton.

Evolutionary planning. Data provided evidence of opportunistic, rolling planning in the Grafton case. It is significant to note that Pohl acknowledged that she did not launch mainstreaming with an implementation blueprint. This planning flexibility allowed Grafton implementers to neutralize threats such as parental concerns regarding electives and to capitalize on opportunities such as grant funding for information technologies.

Empowerment. Data from the Grafton case support a linkage between empowerment and initiative-taking. Through ongoing dialogue, Grafton's principal created both the necessary organizational structures and the processes which nurtured the staff's capacity to implement and lead the mainstreaming initiative. These processes provided the opportunity to learn through staff development, the freedom to experiment with new roles and instruction approaches supported by the supervisory process, and time to collaborate because of the team structure and common planning time. Collaboration among the actors across the organization horizontally and vertically built both the human and structural capacity to nurture emergent leadership.

Resource mobilization. The Grafton case record chronicles how the principal acquired and utilized resources for successful mainstreaming. She creatively restructured time for teachers and students, space and equipment for the Information Management course, budget, staff development, and staffing.

There are, however, two aspects of Grafton's resource mobilization theme which warrant special comment because of their significance. The first, developing the LMS for her new role, was discussed earlier. The second concerns future staffing needs. When the principal redeployed existing staff for mainstreaming, she added new roles for the LMS as information teacher and the music teacher as computer technician. The full-time LMS remained responsible for serving all of the students at Grafton and for carrying out the traditional, but invisible, librarian tasks of developing and maintaining the center's collection of resources. During her interview, the LMS speculated that, at some point, she would not have the time to fulfill all of these responsibilities.

The full-time music teacher who has released time to act as a computer technician posed a similar question: at what point will the technologies and network at Grafton become so numerous and complex that he will be unable to manage them because of time or expertise?

Problem-coping/monitoring. Grafton data show that mainstreaming involved all of the actors engaged in monitoring progress and problem solving. The case record describes the principal's successful coping with obstacles that threatened to sink the initiative early in its implementation--stakeholder concerns, scheduling, the permanent loss of an assistant principal position, and limited technology resources. As new problems arose, the ninth-grade teaching team had begun to assume responsibility for identifying and solving problems. For example, when the LMS realized that her Information Management students had only a physical education class in common, rather than an English class, she worked with the physical education teacher to design a research project which became the instructional context for the second part of instruction on information finding skills. The teachers' expressed commitment to solving other problems associated with mainstreaming suggests that the deep coping associated with successful change will continue as a theme at Grafton.

Restructuring. Restructuring, the essence of Grafton's mainstreaming effort, has driven a reordering of the school's ninth-grade program and organizational structure to remove the obstacles to mainstreaming. It has been the context in which all of the implementation themes were found. The success of Grafton's mainstreaming is a product of the synergy among these themes. Grafton findings are significant because they provide details on the restructuring of time, roles, and program.

Lawton High School Case

Although artifact evidence from Lawton High School revealed that mainstreaming is not fully realized, the case is included because it adds a developmental perspective to the Grafton case. It provides a description of the principal roles and change themes in a high school preparing to move information skill instruction from a marginalized experience available to some students to a mainstream experience for all students. This evolution offers the reader instructive insight on the creative tension inherent in launching a journey toward mainstreaming within a traditional organization.

Lawton High School, a comprehensive high school for grades 9-12, is located in southwestern Connecticut. According to 1990 census data, it serves an urban area with a population of 108,056 (OPM, 1991).The city's population is 76.3% white, 17.8% African American, 2.6% Asian, 0.1% Native American, and 3.2% other races. Persons of Hispanic origin, regardless of race, comprise 9.8% of the population. School age youth (18 or younger) comprise 21% of the total urban population.

Built in 1928 and renovated most recently in 1967, Lawton is one of two comprehensive high schools in the city. At the time of the study, its enrollment was 1500 students, 49.8% of whom are white, nonHispanic; 29.5% African American; and 17.4% Hispanic. Students typically begin their education in one of the school's six feeder elementary schools and spend grades 6-8 in one of the three middle schools before entering their freshman year at Lawton. More than 98% of the enrolled students graduate from Lawton, although not all complete their requirements in four years; 80.6% pursue post-secondary education. If Scholastic Aptitude Test scores are a reflection of students' academic potential, Lawton students are above the state average. Community support for education is reflected in the per student expenditure of $8500.

Two LMSs and four educational assistants deliver library media program services to Lawton's students and staff. The center, located on two floors, is stocked with these resources: 16,000 books, 85 periodicals, and supporting audiovisual materials and microforms. Library information technologies include five CD-ROM sources (NewsBank, WilsonDisc, Academic American Encyclopedia, SIRS, Contemporary Authors), a computer which enables students to access the public library's collection, modem access to DIALOG (a collection of information databases), and an automated circulation system. Data entry is underway to automate the center's library catalog. In addition to the center, there are two annexed areas--a computer laboratory and a multi-purpose room which serves as a professional library, conference room, and overflow area for classes using the center. The networked computer laboratory consisting of 25 IBM computers is managed jointly by the center's staff and a mathematics/science teacher. A long-range plan exists to make the center the hub of a networked school environment.

Lawton's Mainstreaming Journey

Lawton High School's journey toward mainstreaming information skill instruction spans

the tenure of two principals--Ned Michaels and Mike Turner. Their goal for Lawton High School was to make the library media program the focus of the school program. Michaels and Turner employed six strategies to move toward their goal--staffing, ripple effect, staff development and supervision, informal monitoring, and resource provision. They measured the effectiveness of these strategies informally by analyzing how classroom activities were supported by the library media program and by the number of students observed using the center.

Their staffing strategy centered on the use of Lawton's senior LMS as a consigliere, a trusted change agent who could work directly with teachers. Although not officially a department chair, the principals asked her attend departmental meetings, supported her involvement in staff development, and named her to sit on or lead high-profile committees such as the school's accreditation self-study. During Michaels' tenure, he met regularly with her to monitor progress of their ripple effect strategy--a process by which the positive experiences of one teacher in utilizing the instructional services of the LMS prompts another teacher or group of teachers to decide to expose their students to information skill instruction.

The supervision strategy involved having the assistant principals use the supervisory process to encourage teacher experimentation with new instructional methods and collaborating with the LMS on instructional design and implementation. Since staff development is building-based, the principals have been able to link areas of teacher experimentation with planned staff development programs and to utilize the LMS' skill in organizing and presenting these programs that focus on information technology, information skills, and interdisciplinary teaching, and resource-based learning.

Mobilization of scarce resources for the library media program communicated its importance to the staff. Examples include the conversion of the staff's professional library area to additional library media space for students, the placement of a computer laboratory adjacent to the library media center, and the maintenance of adequate library media staffing to free the LMS for her consigliere responsibilities.

A series of events over the summer of 1992 set the stage for the second chapter of Lawton's mainstreaming story. Michaels resigned to become a deputy superintendent in the district. Twenty-two new teachers were hired based on their experience with or knowledge of

interdisciplinary learning and using the media center for teaching from multiple resources, rather than textbooks. The LMS was given a central role in acclimating and mentoring these new teachers. Late in the summer, Mike Turner, one of Lawton's assistant principal, was named principal.

Because Turner believed that it was time to weave together the staff's experimentation with interdisciplinary teaching, resource-based learning, multiculturalism, grouping practices, technology, and alternative forms of assessment, he targeted the rewriting of the school's curricula as means of consolidation. His stated intent was to place information finding skills at the center of all revisions. Moreover, he not only continued the LMS' role as consigliere but also increased the scope of her involvement. However, Turner has also faced with severe budget limitations which constrained staff development programming and scuttled his plans to provide students with more computers and the library media center with more space to accommodate increasing use. Rather than lamenting the situation, he had begun aggressively pursuing the involvement of the community in the school as a means to gain support for adequate funding.

Although mainstreaming was not yet a reality when the study's fieldwork ended, Lawton was moving toward it. The number of students receiving information literacy instruction had increased to the point that physical space and time limit student learning opportunities. It is significant that the LMS had begun to work with interested teachers so that they would be able to teach information skills to their students.

Lawton Principal Roles

The first question driving this study dealt with the principal's role in mainstreaming instruction in information finding skills. Because mainstreaming is not yet a reality at Lawton, it is not possible to answer the question directly. It is feasible to examine the Lawton case record to define a principal's role in setting the stage for mainstreaming. Data support three roles for both principals--direction setter, communicator, and facilitator.

Direction setter. As direction setters, both Lawton principals set goals which are conducive to mainstreaming information skill instruction. There are two reasons why the Lawton principals' behaviors were labeled direction setters, rather than visionaries. First, Lawton informants, including the principals, did not use vision terminology to describe leader behaviors. Second, data

revealed that principal roles included both traditional and newer leader behaviors for setting organizational purpose. The principals demonstrated a form of traditional goal-setting in their articulation the importance of the instruction offered by library media program. While they manipulated cultural (e. g., the symbolism of the senior LMS' "insider" access to the principals) and bureaucratic mechanisms (space and money allocations) to sell the goal's importance, they did not mandate teacher participation. Instead, the Lawton principals initiated a dialogue with the staff which allowed teachers to construct their own beliefs regarding the importance of the information finding and related curricular changes--a leader behavior more aligned with the collaborative visionary roles. Data supported the effectiveness of this mix of traditional and newer leaders roles in launching the educational dialogue to alter teacher beliefs and practice related to mainstreaming.

Communicator role. The Lawton case found that the principals were communicators. Both engaged in telling and listening behaviors. Because Lawton is a traditional setting, there were instances of traditional behaviors, such as Michaels' top-down decision to move the computer laboratory from the mathematics area to the library media area to symbolize the importance of the library media program.

However, Lawton informants talked more frequently of each principal's ability to listen to and incorporate their ideas. The Lawton dialogue for mainstreaming began with the principals' articulating their goals, promoting discussions about it, and listening as other staff members added their ideas to the improvement menu. The case found that their listening was geared to integrating and purposing, not gathering feedback for manipulation. Even in the case of the computer laboratory, Michaels followed his unilateral decision with a dialogue which engaged departments in the writing of a building-wide technology plan.

Facilitator role. The Lawton case also found its principals in the role of facilitator exhibiting a mix of traditional and new leader behaviors. Michaels and Turner demonstrated a traditional change facilitator behavior defined by Hall and Hord (1987)--naming and supporting a consigliere. The case also described empowering behaviors associated with more newer leader roles. Rather than prescribe to teachers how to expose more students to information skill instruction, they aggressively encouraged teacher experimentation through the supervisory process; pursued necessary staffing, technology, and staff development resources; and willingly deferred to teacher

leadership of the mainstreaming effort. Principals also offered the LMS' skills as a resource to teachers and focused school wide activities on the library media program. These empowering behaviors generated the changes in teacher beliefs and practice which are a necessary precursors to mainstreaming.

Lawton Launching Themes

The implementation themes described by Louis and Miles (1990) were found in the Lawton High School case. Those themes are vision-building, evolutionary planning, empowerment, resource mobilization, and problem-coping/monitoring. Many of the Lawton themes are in their infancy developmentally, because neither mainstreaming nor the restructuring had emerged.

Vision-building. The case found that Lawton dialogue on mainstreaming surfaced and captured ideas from interested staff and fostered cross-role participation between the LMS and teachers to build a common understanding of information skill instruction. Both principals have been willing to step down from the role of instructional leader in order for teachers and the LMS to decide how to move forward. It is significant that a growing number of teachers see the importance of information skill instruction, allow LMS to provide it, and are willing to undertake responsibility themselves for teaching portions of it.

Evolutionary planning. Evolutionary planning was a characteristic of Lawton's launching the journey toward mainstreaming. It is significant that the actors, especially the principals and LMS, have leveraged emergent opportunities to move mainstreaming forward. Examples include the Lawton tradition that all freshman receive library orientation, the need to hire new staff, and the school accreditation process. Turner's decision to integrate initiatives under schoolwide curriculum revision designed to incorporate information finding skills and Michaels' appointment of a district committee to look at restructuring high schools have the potential to realize mainstreaming.

Empowerment. Lawton data found that, by deputizing the senior LMS as the change agent, the principals have set in motion an empowerment process which has the potential to mainstream search skill instruction through teacher leadership. Their support of the LMS coupled with their acquisition of resources and willingness to nurture and share leadership has allowed a synergy of experience and expertise to develop that bodes well for the mainstreaming effort.

Resource mobilization. Data documented the principals' aggressive, tenacious pursuit of

the resources necessary for mainstreaming. Their reallocation of resources such as space, computers, and staff and their attempts at garnering more technology and more funding for staff development were perceived by informants as moving the initiative forward. Providing supervisory encouragement and technical support have communicated that information finding experiences are important for students and staff and that it is acceptable to experiment with these learning experiences.

The case also found a staffing concern similar to the one raised in the Grafton case regarding the released-time computer teacher and the LMS. If resources increase the number and complexity of the computer technologies at Lawton, additional staffing will be needed to provide ongoing, readily available technical support. Although Lawton has two LMSs, the ability of these professionals to manage a mainstreamed program could be taxed well beyond their limits.

Problem-coping/monitoring. Because Lawton is setting out on the journey toward mainstreaming, rather than implementing it, data indicated that monitoring and problem coping have largely been the responsibility of the principals and their LMS consigliere. Aside from the LMS' instructional calendar, there is no formal mechanism to track whether every student has equal opportunity to learn and practice information skills. Neither Michaels nor Turner utilize the calendar, preferring instead to monitor exposure to information skill instruction through what they observe when walking around the building and from what they hear from teachers.

Data showed that problem coping has been shared by principals in the areas of supervision and resource mobilization and by the LMS in the area of integrating instruction. Although problems with space, facility, equipment, staffing, and budget occupied principals' time, they encouraged teachers to work with the LMS in providing students with opportunities to learn and practice search skills. They permitted teachers to identify and resolve problems such as the need for a style manual which incorporates information skills and the need to distribute responsibility for information skill instruction.

Restructuring. Since the restructuring theme surfaced in only one informant interview and since no permanent adjustments to any of the components of the school program or organization had been made at Lawton at the time of this study, sufficient data did not exist to support it as a Lawton theme.

Discussion

This investigation set out to describe the high school principal's role in mainstreaming information-finding skills and to discover whether the change implementation themes associated with successful school innovation were present in the mainstreaming process. Findings from two case studies assigned new leadership roles to principals engaged in mainstreaming and documented the presence of change themes in the implementation process.

In the Grafton case, the designer principal engaged in behaviors associated with restructuring and building a learning organization. The collaborative visionary, architect, and transformational facilitator behaviors which emerged from the data are similar to Senge's definition of leadership in a learning organization. A leader's role is to design the learning processes "...whereby people throughout the organization can deal productively with critical issues they face and develop their mastery..." (Senge, 1990, p. 345). The leader is responsible for evolving a consensually held vision, nurturing the capacity of individuals and the organization to manage and lead change, and structuring the organization to accommodate continuous change. It is this generativity that differentiates the designer role from traditional principal roles. When designer behaviors operate synergistically across the many dimensions of an organizational ecology with the intent of building and then distributing leadership, then individuals, including the principal, and groups become learner and collaborators.

The dialoguing communicator role was essential to Grafton's mainstreaming. Continuous dialogue among stakeholders is critical for a learning organization (Senge, 1990). Exchange of information between teachers and a nondominating leader has been associated with successful change by Conley (1993) and Fullan (1993). Starratt (1993) considers the institutionalization of self-reflective groups necessary for organizational improvement.

Because mainstreaming involves moving information skill instruction from the periphery of high school program, it is not surprising that all six of the change implementation themes were present at Grafton. With the creation of new organizational structure, roles, and relationships in the freshman program, Grafton's implementers addressed the variables which researchers associate with successful school improvement (Beck & Murphy, 1993; Conley, 1993; Fullan, 1993; Fullan & Stiegelbauer, 1991; Murphy, 1991; Starratt, 1993) and successful integration of technology

(Cuban, 1986, 1992; Means, Blando, Olson, Middleton, Morocco, Remz, & Zorfass, 1993; Nickerson & Zodhiates, 1988; Papert, 1993; Sheingold, 1991). The issues which emerged during implementation--revisions to instruction, curriculum, and scheduling, accountability and staffing--seem to ensure that the themes will continue for the foreseeable future.

The Lawton findings demonstrate that launching a traditional high school on its journey to mainstreaming requires that principals engage in a mix of traditional and new leader roles and that the themes of vision building, evolutionary planning, empowerment, resource mobilization, and problem coping are evident in the early stages of implementation. The direction setting, communicating, and facilitating behaviors of the principals are reminiscent of traditional behaviors associated with instructional leadership in which principals manipulate the bureaucratic and cultural dimensions to achieve school goals (Beck & Murphy, 1993; Firestone & Wilson, 1985; Reitzug & Reeves, 1992). However, the Lawton principals' aggressive support of teacher experimentation with new instructional methodologies, their active listening and response to teacher ideas, and their willingness to nurture and support emergent teacher leadership suggests a gradual migration toward collaborative leadership. The creative tension which results from straddling between the status quo and its supplanter is a characteristic of a organization which is attempting to change to meet new demands on it (Senge, 1990). It seems reasonable to suggest that principals who undertake mainstreaming--a new demand on high schools--must be willing and able to manage that tension.

The presence of five change implementation themes suggests that setting the stage for change involves is a complex interaction among beliefs, individual and organizational capacity, available resources, planning, and problem solving. This finding supports the ecologic paradigm of schools as complex interdependencies (Leithwood, 1992; Patterson, Purkey & Parker, 1986, Sarason, 1990; Sergiovanni, 1991) through which the dynamic process of change flows (Fullan, 1993). What is not known is whether these processes will eventually evolve to restructuring and/or move Lawton to mainstreaming.

Conclusions

Based on the investigation's findings, the following conclusions can be drawn. First, the substance of mainstreaming seems to force restructuring. Neuman (1991) is supported in her

assumption that moving integrated instruction on accessing and retrieving information from teacher choice to universal student exposure restructures program, organization, and educator roles. At Grafton, mainstreaming changed program, organizational structures, and educator roles. Even in the Lawton site where mainstreaming has yet to be realized, the principals and the senior LMS had assumed nontraditional role and the traditional integration strategy was supplanted by a principal-sanctioned ripple-effect approach.

Second, in response to the first question, the study identified the roles of designer and communicator for the high school principal who is successful at mainstreaming. These roles differ significantly from traditional principal roles in their collaborative and generative characteristics. Whether the strategy is initial direction setting or subsequent visioning, it is important for the designer-principal to initiate a dialogue with staff to evolve a shared understanding and valuing of information literacy. These collaborative behaviors draw out the ideas of others, nurture consensus, and beget a self-perpetuating synergy which taps the expertise and leadership of all staff members.

When consensus is reached and teachers are ready to act, it is important for the architect-principal to alter traditional organizational and program structures which obstruct implementation. It is significant to note that the teachers in Neuman's study (1990) were committed to information skill instruction but were blocked in their efforts to implement successfully by scheduling and curriculum. The failure to align subjective reality of teachers with organizational reality has been the common thread in unsuccessful school reform (Fullan & Stiegelbauer, 1991).

A mainstreaming principal also necessarily engages in transformational facilitator behaviors. Empowerment seeks to build capacity for the content and substance of change. Transformative facilitation seeks to go beyond empowerment by building individuals' capacity for assuming leadership. Its goal is personal and collective learning for all participants, including the principal. On one level, it takes the form of staff development and training in technology, resource-based learning, information finding skills, and interdisciplinary learning; assistance and support with instructional strategies; and the creative gathering or redeployment of monies, staff, facilities and computer technologies. On the next level, it involves identifying emergent teacher-leaders for the purpose of developing their leadership skills, a process which will ultimately result in

changing the principal's role.

The role which undergirds the designer role and the mainstreaming process is that of dialoguing communicator. The heterarchical nature of the high school environment and the scope of change represented by mainstreaming preclude unidirectional communication of an expert principal mandating implementation of information skill instruction. Bi- or multi-directional communication is information sharing, the foundation for personal and organizational learning. Since Grafton educators had embarked on a change with unfamiliar content using new technologies in a restructured school setting, constant dialogue wasn necessary to tap emergent expertise and revise vision and decision making accordingly. Even in Lawton's stage-setting mode, principal facilitation had begun the migration from transactional bargaining toward a dialogue which empowers and transforms.

The third conclusion is related to the study's second question. All of the implementation processes identified by Fullan and Stiegelbauer (1991) were characteristics of successful mainstreaming. As these writers suggest, the themes are highly interactive and simultaneous. What seems evident from the case studies, however, is that these themes emerge during the initiation of mainstreaming and become self-perpetuating when a collaborative learning community shares implementation responsibility. Because the discipline of mastery is as continuous (Senge, 1990) as the dynamic change process (Fullan, 1993), it is likely that these themes will be enduring characteristics of Grafton' and Lawton's mainstreaming efforts.

Implications

The findings of this study have implications in two areas for educators and educational stakeholders who wish to move forward with mainstreaming and for researchers who wish to inform the process. First, the Grafton and Lawton mainstreaming stories are narratives of building the human capacity of key stakeholders through transformation of their will and their skills. Will connotes actors' beliefs and values, both of which evolve from awareness and understanding. Skill refers to the ability to act on beliefs and values and is associated in schools with professional practice. Those educators committed to preparing information literate students are encouraged to build consensual will, or purpose, for it through continuous dialogue with stakeholders to make them aware of the need for information literacy instruction, nurture their ability to reflect

continuously on the alignment between their beliefs and practices and societal trends, and encourage their networking.

Skill-building is the next rung on the capacity-building ladder. For principals, it means learning how to design new organizational structures, build collaborative work environments, manage the creative tension spawned by journey from traditional to new, and dialogue with stakeholders. For teachers, it involves learning information finding skills and acquiring the related instructional methodologies of interdisciplinary teaching, cooperative learning, resource-based learning, and alternative assessments. For LMSs, it is the aggressive pursuit of collaborative planning skills associated with learning activities which are resource-based rather than textbook-based and of exemplary teaching methodologies.

However, because the mainstreaming of information literacy is relatively new, the traditional avenues for educators to explore it (e. g., workshops and conferences) are limited. It is suggested that interested educators aggressively mine their professional networks to identify colleagues who are pursuing mainstreaming. It also seems logical that preservice institutions for educators and state departments of education provide leadership and training in the technological, curricular, instructional and leadership associated with mainstreaming information literacy.

Second, additional research on mainstreaming information literacy is necessary. While this study provides one example of successful mainstreaming, the database of examples needs to be expanded to describe mainstreaming strategies in other settings; refine, expand, or challenge this study's findings; and answer the questions raised by its findings. More research is also needed on new principal roles and behaviors and the language to describe them.

The study's findings suggest additional research in area of educational change. If continuous change is the norm, rather than the exception for mainstreaming schools, then the characteristics of institutionalization, the last stage of accepted change models (Fullan & Stiegelbauer, 1991), needs to be re-examined. Questions to be answered include whether the change themes associated with implementation become enduring characteristics of effective schools, how adult learners cope with the creative tension generated by continuous change, and how school leaders address public accountability in democratic schools in which continuous change is the norm.

Finally, the study raised three questions related to mainstreaming which need to be addressed in greater detail by subsequent research: 1) what role should teachers play in instructing information skills, given a network's ability to deliver information databases to the classroom; 2) what changes in the LMS' roles and responsibilities or in the staffing of the library media program are needed to accommodate mainstreaming; and 3) what kinds of staffing are necessary to accommodate the increasingly complex technology environments of mainstreaming schools.

Limitations

This study has numerous limitations including the investigator's inexperience and her status as positioned subject. The absence of a suburban case is a potential limitation because this context may yield different findings. The investigator applied accepted measures to control these threats--triangulation of data, member checking, peer debriefing, detailed case description, connection of findings to theoretical frameworks, and an audit of the study's records.

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